PATENT ABSTRACTS OF JAPAN

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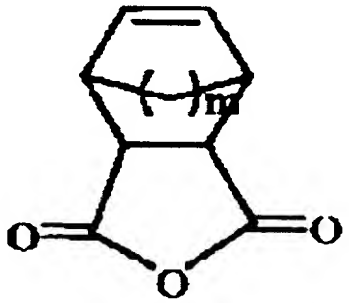
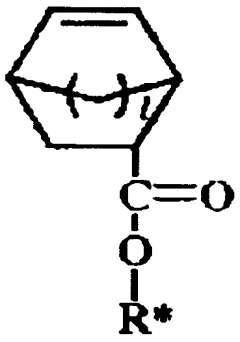
(54) PHOTORESIST MONOMER, PHOTORESIST COPOLYMER AND PREPARATION THEREOF, PHOTORESIST COMPOSITION, PHOTORESIST PATTERN FORMATION METHOD, AND SEMICONDUCTOR DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To obtain a photoresist monomer having etching resistance, heat resistance, capability to adhere to substrates, photosensitivity, and solubility in a normal alkali developing soln. by using a compd. having a norbornene or bicyclooctoene structure.
SOLUTION: A compd. of formula I (wherein m is 1 or 2) is used in the form of copolymer contg. the compd. of formula I and a compd. of formula I (wherein R* is an acid-sensitive protective group; and l is 1 or 2). Normally, t-butyl, 2-tetrahydrofuran, 2-tetrahydropyran, ethoxyethyl, and t-butoxyethyl groups are listed as the acid-sensitive protective group R*. The copolymer is obtd. by the polymn. using a polymn. initiator or a metal catalyst. In the case of polymn. using a polymn. initiator, further addition of a comonomer (e.g. maleic anhydride or a maleimide deriv.) capable of accelerating the polymn. is pref. The mol.wt. of the copolymer is pref. 3,000-100,000.



I



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WPI =======

TI - Photoresist monomer for photoresist composition used in semiconductor device manufacture by optical lithography, comprise a norbornene dicarboxylic anhydride-type compound

AB - JP2000080124 NOVELTY - A photoresist monomer comprises a norbornene dicarboxylic anhydride-type compound.
- DETAILED DESCRIPTION - A photoresist monomer of formula (I) comprises a norbornene dicarboxylic anhydride-type compound.
- m = 1 or 2.
- INDEPENDENT CLAIMS are also included for the following:
- (i) the manufacture of a photoresist copolymer, where photoresist monomers of formula (I) and formula (II) and maleic anhydride and/or maleimide derivative are dissolved in an organic solvent (A) and polymerization initiator is added to the resultant solution;
- (ii) a photoresist composition comprising a photoresist copolymer as above, a photooxidant generator and an organic solvent (B); and
- (iii) formation of a photoresist pattern by coating a photoresist composition as above on a semiconductor substrate to form a photoresist film and exposing and developing the film to form a pattern.
- R asterisk = acid sensitive protective group, preferably t-butyl, 2-tetrahydrofuran, 2-tetrahydropyran, ethoxy ethyl or t-butoxy ethyl; and
- l = 1 or 2.
- USE - For semiconductor devices (claimed). The photoresist is used to manufacture highly integrated semiconductor devices by optical photolithography.
- ADVANTAGE - The photoresist monomer is etching resistant, heat resistant, optically sensitive and adheres strongly to the substrate. The photoresist copolymer can be exposed with ultrashort wavelength of 250 nm or less. The photoresist can be developed with existing alkali developer.
- (Dwg.0/0)

PN - JP2000080124 A 20000321 DW200053 C08F32/00 013pp
- KR2000015248 A 20000315 DW200104 G03F7/039 000pp
- KR2000015410 A 20000315 DW200104 G03F7/039 000pp

PR - KR19980035291 19980828;KR19980035029 19980827

PA - (HYUN-N) HYUNDAI ELECTRONICS IND CO LTD

IN - NOH C H; CHUNG J C

MC - A04-D04A1 A04-F05 A08-M08 A08-S02 A10-B04 A10-E05 A10-E10 A11-B05 A11-B05D A12-E07C A12-L02B2 G06-D06 G06-E04 G06-F03C G06-F03D G06-G17 G06-G18 L04-C05
- U11-A06A

DC - A17 A89 G06 L03 P84 U11

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TI - PHOTORESIST MONOMER, PHOTORESIST COPOLYMER AND PREPARATION THEREOF, PHOTORESIST COMPOSITION, PHOTORESIST PATTERN FORMATION METHOD, AND SEMICONDUCTOR DEVICE

AB - PROBLEM TO BE SOLVED: To obtain a photoresist monomer having etching resistance, heat resistance, capability to adhere to substrates, photosensitivity, and solubility in a normal alkali developing soln. by using a compd. having a norbornene or bicyclooctoene structure.
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I - C08F32/00 ;G03F7/039